Work Order ID 50038

July 6, 2009 9:44:12 AM

Item ID: D412-664-203
Revision ID: D
Item Name: Crosstube Aft

Start Date: 08/07/2009 **Start Qty:** 1.00
Required Date: 17/07/2009 **Req'd Qty:** 1.00
Reference:

Accept **Setup Start** **Stop**

Cust Item ID:
Customer:

Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
100		0.00							
DC									
Document Control	**Memo** AJ for MF 09/07/27	0.00							
	Photocopy bluefile and create labels as per PPP D412-664-203 CHG 006 S 09/07/27								
110	Pick Kit	0.00							
Packaging									
Packaging	**Memo**	0.00							
120		0.00							
CNC Bend 2									
CNC Alpha 160 Bender	**Memo**	0.00							
	Bend tube as per Dwg D412-664-243 using CNC bender program 412-af and Folio FT010 MB 09-07-09								

Draw Nbr	Revision Nbr
D412-664-243	D

9/7/27 EW

B 500 38

Work Order ID 50038

July 6, 2009 9:44:12 AM

Item ID: D412-664-203 **Accept** **Setup Start** **Stop**

Revision ID: D

Item Name: Crosstube Aft

Start Date: 08/07/2009 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 17/07/2009 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start **Stop**

Approvals: **Process Plan:** **Date:** **Tooling:** **Date:**

QC: **Date:** **SPC (Y/N):** **Date:**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	QC15- Crosstube Dimensional Check	0.00							
QC	**Memo**	0.00							
Quality Control									
140		0.00							
Crosstubes	**Memo**	0.00							
Crosstubes	1-Drill pilot holes in tube as per Dwg D412-664-243 using drill Jig DT8550 & DT8551								
	2-Ream hole to finish size in tube as per Dwg D412-664-243using drill Jig DT8550 & DT8551.Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.								
	3-SCRIBE PART # & BATCH #								
	4-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-243								

27 Sol/07/10 EC

MB 09-07-14 (1K)

-AUM9-7-14 (1)

Work Order ID 50038

July 6, 2009 9:44:12 AM

Item ID: D412-664-203 **Accept** **Setup Start** **Stop**

Revision ID: D

Item Name: Crosstube Aft

Start Date: 08/07/2009 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 17/07/2009 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

QC: **Date:** **SPC (Y/N):** **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Crosstubes Chemical Conversion	0.00							
HandFXtube	**Memo**	0.00	– 9-7-14/AWM						
Hand Finishing Crosstubes									
160	QC3- Inspect Part Finish	0.00							
QC	**Memo**	0.00	=> 8/9/07/14		(A1)		6		
Quality Control									
170	QC5- Inspect part completeness to step on W/O	0.00							
QC	**Memo**	0.00	=> 8/9/07/14		(A1)		6		
Quality Control									

Work Order ID 50038

July 6, 2009 9:44:12 AM

Item ID: D412-664-203 **Accept** **Setup Start**

Revision ID: D **Stop**

Item Name: Crosstube Aft

Start Date: 08/07/2009 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 17/07/2009 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start

Approvals: **Process Plan:** **Date:** **Tooling:** **Date:**

Stop

QC: **Date:** **SPC (Y/N):** **Date:**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180	Outsource process - NDT per QSI038 4.1	0.00							
Outsource2	**Memo**	0.00							
Outsource process - NDT	Liquid Penetrant Inspection as per QSI 038Or Issue P/O: 100 94 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order								
190	Receive & Inspect for Damage & Mat'l Certs	0.00							
Packaging	**Memo**	0.00							
Packaging	Ensure copy of NDT results attached to work order.								
200	QC5- Inspect part completeness to step on W/O	0.00							
QC	**Memo**	0.00							
Quality Control									

CZ 09071116 ①

09/7/16

BT 09-07-20

Work Order ID 50038

July 6, 2009 9:44:12 AM

Item ID: D412-664-203 **Accept** **Setup Start** **Stop**

Revision ID: D

Item Name: Crosstube Aft

Start Date: 08/07/2009 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 17/07/2009 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start** **Stop**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	Spray Painting per QSI005 4.2	0.00							
SprayPaint	**Memo**	0.00							

Spray Painting

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:
Start Time: 10:30
Fininsh Time: 11:30

PAINT:
Start Time: 3:06
Finish Time: 4:20

⇒ ml 09 07 20 (T)

220	QC14- Inspect Spray Paint	0.00	
QC	**Memo**	0.00	

Quality Control

IT 09-07-21
IT 09-07-24

Work Order ID 50038

July 6, 2009 9:44:12 AM

Item ID: D412-664-203 **Accept** **Setup Start** **Stop**

Revision ID: D

Item Name: Crosstube Aft

Start Date: 08/07/2009 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 17/07/2009 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start** **Stop**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	Pick Kit	0.00				9/Hrs	0	90	
Packaging	**Memo**	0.00							
Packaging									
240		0.00							
Crosstubes	**Memo**	0.00							
Crosstubes	Assemble as per Dwg D412-664-203								

1- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

2-Install supports with magnobond as per QSI 015 Adhere for for 12 Hrs
A/R 6398 Magnobond Batch: 111249
Expiry Date: 02/2010

=> ml 09 07 01 (1)

3-Install clamps as per Dwg D212-664-203 using installaition jig DT9024 with 0.010 thick brass shims on both chafing sheild (D3189-1). Torque clamps to 80-100 in lb. ml 09 07 22

PTO

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: DH12-664-203 PAR #: N/A Fault Category: Crossholes NCR: (Yes) No DQA: [signature] Date: 09.07.28

Resolution: Re-work Disposition: Re-work QA: N/C Closed: [signature] Date: 05.08.19

NCR: 50038		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
9/7/22	B 240	During inspection Found that the center support is off by at least 1/8" From center. Shifted when tightening the ~~Rest~~ clamps over fresh magnaflux. RC: process	QS/CW2	- Remove the center support very carefully. ? remove any magnaflux off both the support & x-tube. - Sand the affected area smooth and re-work pending ? QS/CW5.	MM 09.07.23	[signature] 09/07/27	QS/CW2	[signature] 9/7/22

NOTE: Date & initial all entries

Work Order ID 50038

July 6, 2009 9:44:12 AM

Item ID: D412-664-203 **Accept** **Setup Start** **Stop**

Revision ID: D

Item Name: Crosstube Aft

Start Date: 08/07/2009 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 17/07/2009 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start **Stop**

Approvals: **Process Plan:** _____ **Date:** **Tooling:** _____ **Date:** _____

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250	QC5- Inspect part completeness to step on W/O	0.00	=> 50/6/07			(40)	0		
QC	**Memo**	0.00							
Quality Control									
260	Pick Kit	0.00				9/17/27 (10 SP			
Packaging	**Memo**	0.00							
Packaging									
270	QC4- 100% Inspect kits for completeness	0.00	=> 50/9/07			(40)	0		
QC	**Memo**	0.00							
Quality Control									

Work Order ID 50038

July 6, 2009 9:44:12 AM

Item ID: D412-664-203 **Accept** **Setup Start** **Stop**

Revision ID: D

Item Name: Crosstube Aft

Start Date: 08/07/2009 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 17/07/2009 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** **Date:** **Tooling:** **Date:** **Run Start** **Stop**

QC: **Date:** **SPC (Y/N):** **Date:**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
280		0.00							
Packaging	**Memo**	0.00							
Packaging	Identify and pack for shipping as per PPP D412-664-203								
	******Ensure tube is not packaged if curing time is less than 12 hrs, see step 27 for application time & date *******								
	Time & date of packaging: July 27th, 2009 @ 2:00pm								
	Location: D								
	PPP Rev: D								
290	QC21- Final Inspection - Work Order Release	0.00							
QC	**Memo**	0.00							
Quality Control									

9/7/07 CD

09/07/28 HJ

MF 09-07-28

Picklist Print

July 6, 2009 9:44:11 AM

Work Order ID: 50038

Parent Item: D412-664-203RevD

Parent Item Name: Crosstube Aft

Comments:

Start Date: 08/07/2009 **Required Date:** 17/07/2009

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D412-664-203TRNRevD		Manufactured	No			110	Each	2.0000	1.0000			

Crosstube Turning Detail

Warehouse Location	Loc Qty	Loc Code	
Main Warehouse			
FG	2		
48396	1		
48397	1		

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3595-063-570RevA		Manufactured	No			230	Each	93.0000	4.0000			

RUBBER CUSHION

Warehouse Location	Loc Qty	Loc Code	
OFFSHORE			
FG	12		
37971	4		
42243	8		
Main Warehouse			
ST	81		
42243	21		
45509	60		

Picklist Print

July 6, 2009 9:44:11 AM

Work Order ID: 50038

Parent Item: D412-664-203RevD

Parent Item Name: Crosstube Aft

Comments:

Start Date: 08/07/2009 **Required Date:** 17/07/2009

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2856-600RevA		Manufactured	No			230	f	472.3400	1.7684			
Abrasion Strip												

Warehouse Location	Loc Qty	Loc Code	
Main Warehouse			
ST	472.34		
24328	6.73		
25656	87.77		
26650	8.23		
36398	154.55		m/. m/ 09 07 21
37668	215.06		

(2X) D2856-600 (Cut to 10.090")

D2896-1RevU/R		Manufactured	No			230	Each	0.0000	1.0000			
Support												
D3189-1RevB		Manufactured	No			230	Each	34.0000	2.0000			
Chafing Shield												

B43209 m/ 09.07.21

Warehouse Location	Loc Qty	Loc Code	
OFFSHORE			
FG	4		
36065	4		
Main Warehouse			
ST	30		
43927 *	9		m/. m/ 09 07 21
47777	21		

Picklist Print

July 6, 2009 9:44:11 AM

Work Order ID: 50038

Parent Item: D412-664-203RevD

Parent Item Name: Crosstube Aft

Comments:

Start Date: 08/07/2009 **Required Date:** 17/07/2009

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS21920-28		Purchased	No			230	Each	156.0000	4.0000			
Clamp(per MIL-DTL-8783C)												

Warehouse Location	Loc Qty	Loc Code	
OFFSHORE			
FG	5		
105884	5		
Main Warehouse			
ST	151		
106864	5		
108466	9		
108847	7		
109181	14		
109965	16		MM 09 07 21
111281	50		
111734	50		

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS21920-30		Purchased	No			230	Each	109.0000	2.0000			
clamp(per MIL-DTL-8783C)												

Warehouse Location	Loc Qty	Loc Code	
Main Warehouse			
ST	109		
107600	9		MM 09 02 21
109181	50		
111258	50		

Picklist Print

July 6, 2009 9:44:11 AM

Work Order ID: 50038

Parent Item: D412-664-203RevD

Parent Item Name: Crosstube Aft

Comments:

Start Date: 08/07/2009 **Required Date:** 17/07/2009

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN6-40A 44		Purchased	No			260	Each	31.0000	4.0000			
Bolt												

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	31	
111424	31	

111424 9/2/27 SO

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN6-41A 42		Purchased	No			260	Each	67.0000	2.0000			
Bolt												

Warehouse Location	Loc Qty	Loc Code
Main Warehouse		
ST	67	
109371	17	
111605	50	

109371 9/4/27 SO

Picklist Print

July 6, 2009 9:44:11 AM

Work Order ID: 50038

Parent Item: D412-664-203RevD

Parent Item Name: Crosstube Aft

Comments:

Start Date: 08/07/2009 **Required Date:** 17/07/2009

Start Qty: 1.00 **Required Qty:** 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN960JD616	+8	Purchased	No			260	Each	484.0000	18.0000			
Washer												

Warehouse Location	Loc Qty	Loc Code	
Main Warehouse			
ST	484		
107242	3		
107959	6		
109371	8		
110704	23		
111193	18		
111607	426		111607 SP

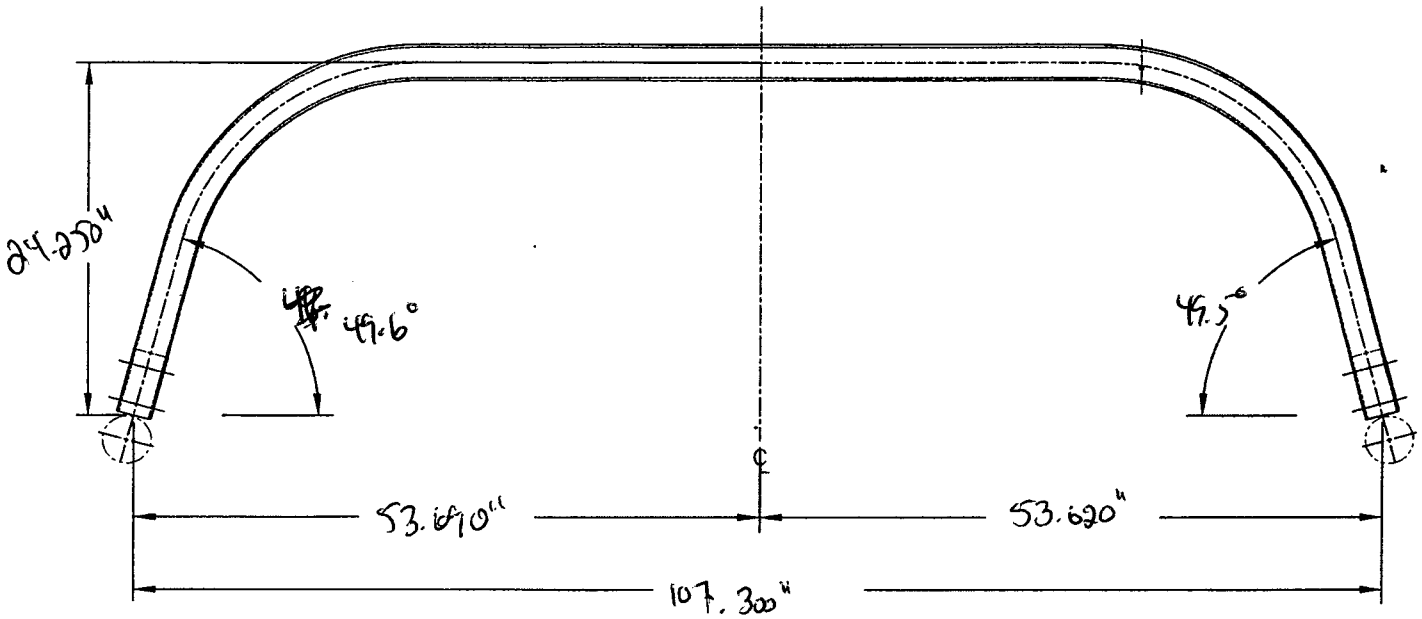
Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS21042L6	+6	Purchased	No			260	Each	803.0000	6.0000			
Nut												

Warehouse Location	Loc Qty	Loc Code	
Main Warehouse			
ST	803		
105077	22		
110002	275		110002
111548	100		
111578	400		
19099	6		

9/7/27 SP

DART AEROSPACE LTD	Work Order:	B-50038
Description: Crosstube High Aft (412)	Part Number:	D412-664-203
Inspection Dwg: D412-664-243 **Rev:** D		Page 1 of 1

Required Dimension	Min	Max
Height	24.24	24.50
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70



Comments

QC15 Inspection	
Date	07/07/10

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.08	Dimensions updated per Dwg rev. D	KJ/JLM	

DART

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
PH	PH		
CHECKED	APPROVED	DRAWING NO.	REV. D
GP		D412-664-243	SHEET 1 OF 3
DATE		TITLE	SCALE
07.03.09		CROSSTUBE ASSEMBLY (412 HI AFT)	NTS

A	01.10.17	NEW ISSUE
B	05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES
C	06.10.27	REMOVE D2856-600-1087, ADD D2732-058 & MAGNOBOND 6398 MS21920-32 WAS MS21920-30
D	07.03.09	REMOVE D2732-058, CHANGE TO D3595-063-570

RELEASED
07.04.24

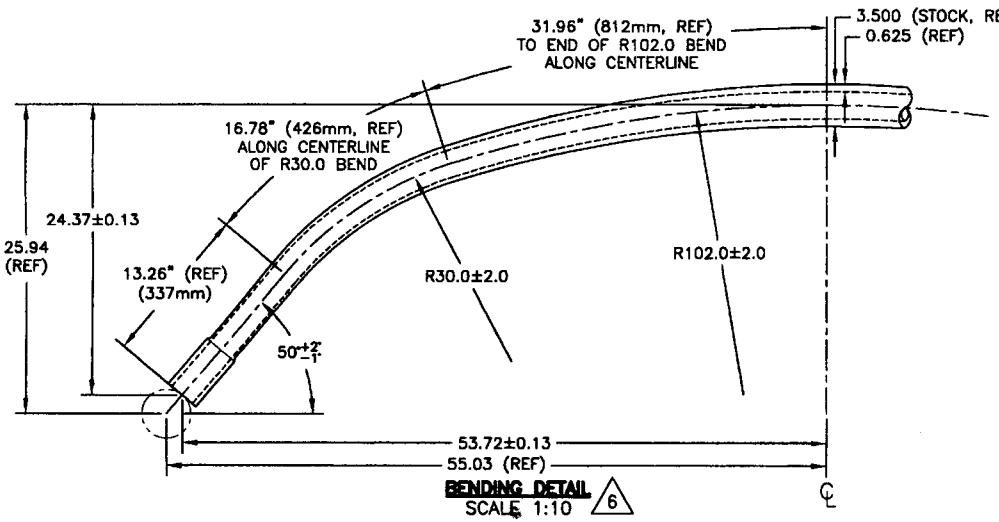
Qty	Part Number	Description
X	D412-664-243	CROSSTUBE ASSEMBLY (412 HIGH AFT)
1	D6009-129	CROSSTUBE
2	D3595-063-570	RUBBER CUSHION
1	D2896-1	SUPPORT
2	D2856-600-1009	ABRASION STRIP
4	MS21920-28	CLAMP
2	MS21920-30	CLAMP (OR MS21920-32)
2	D3189-1	CHAFING SHIELD
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

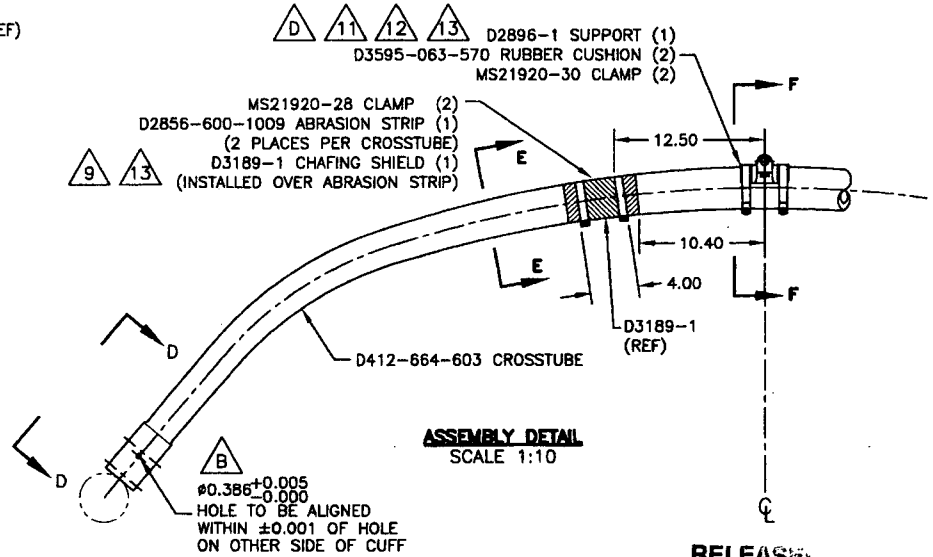
1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
2) MATERIAL: MANUFACTURED FROM D6009-129
 FINISHED LENGTH = 124.09±0.020
3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
 PAINT OUTSIDE PER DART 005 4.2
4) PART IS SYMMETRIC ABOUT CENTERLINE.
5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.
6) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
9) INSTALL D2856-600-1009 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
12) INSTALL MS21920-30 CLAMPS (OR -32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
13) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

5003 8

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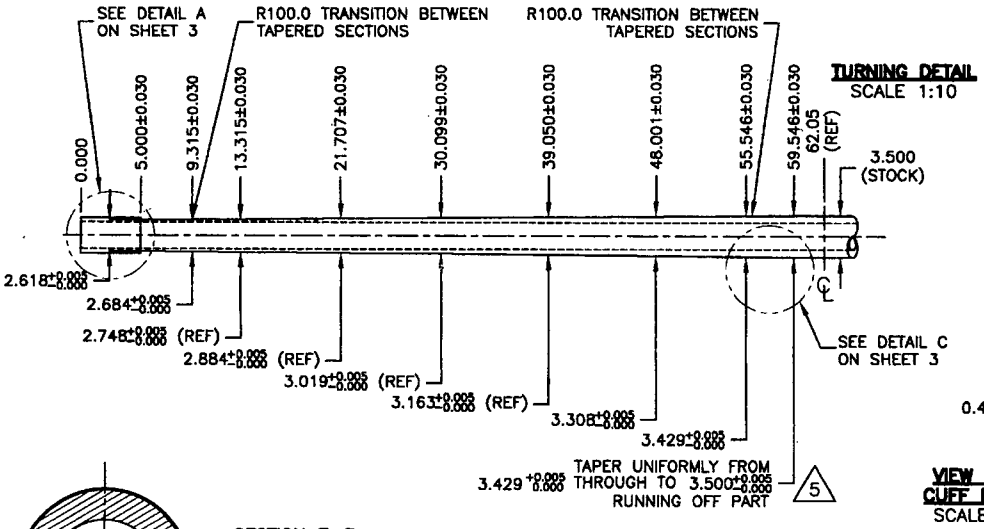


BENDING DETAIL 6
SCALE 1:10

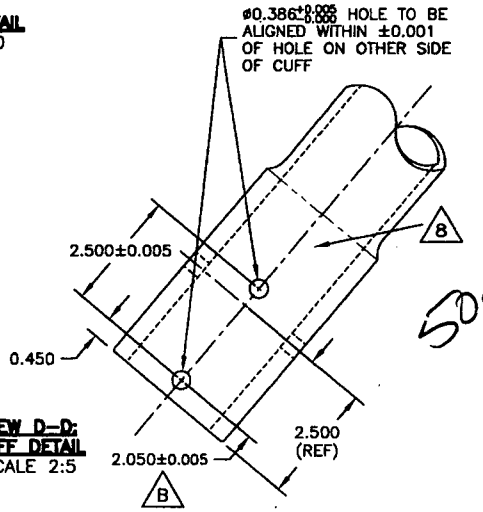


ASSEMBLY DETAIL
SCALE 1:10

RELEASED
07.04.24

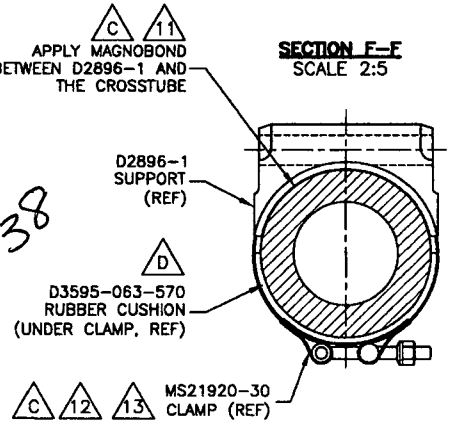


TURNING DETAIL
SCALE 1:10

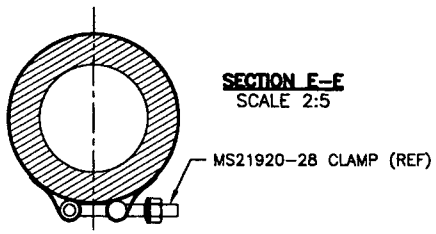


VIEW D–D:
CUFF DETAIL
SCALE 2:5

50038



SECTION E–E
SCALE 2:5



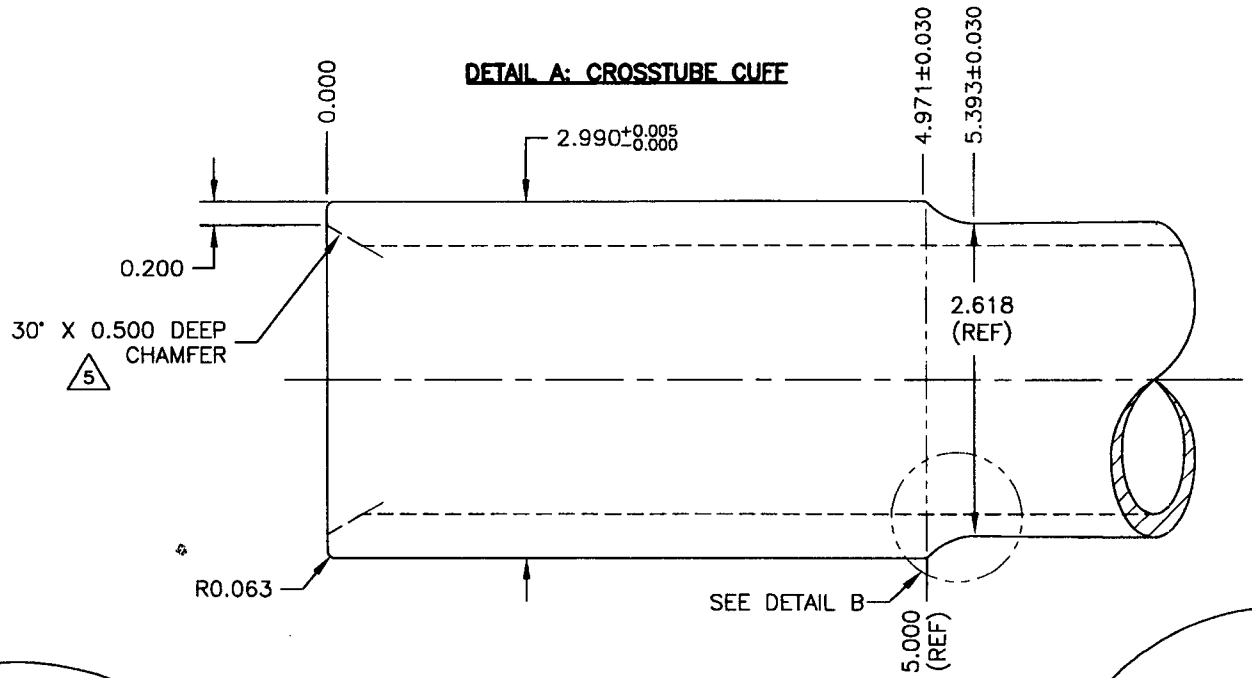
SECTION E–E
SCALE 2:5

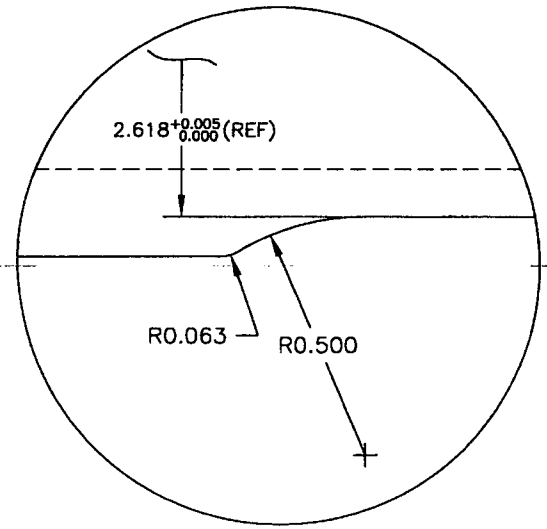
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PH	PH	
CHECKED	APPROVED	DRAWING NO. D412-664-243 REV. D
		SHEET 2 OF 3
DATE 07.03.09		TITLE CROSSTUBE ASSEMBLY (412 HI AFT) SCALE 1:10

RELEASED
07.04.24
PER ECN 897

DETAIL A: CROSSTUBE CUFF

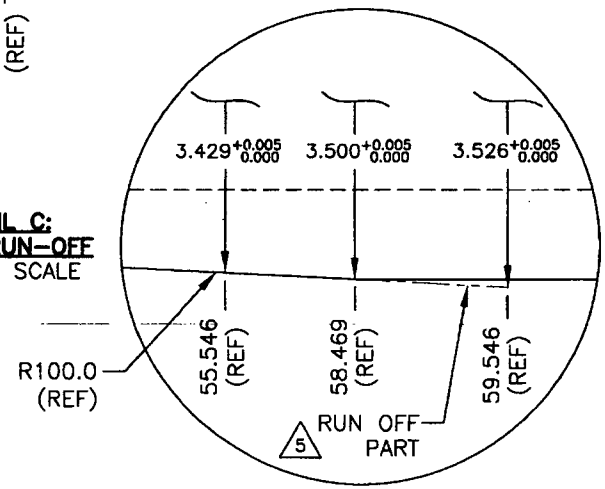




DETAIL B: CUFF TRANSITION
SCALE 4:1

50038

DETAIL C: TAPER RUN-OFF
NOT TO SCALE



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DATE: 07.03.09		TITLE: CROSSTUBE ASSEMBLY (412 HI AFT)	SHEET 3 OF 3 SCALE 1:1

ACUREN

LIQUID PENETRANT TEST REPORT

P- 14943

PAGE 1 OF 1

CLIENT: DART AEROSPACE
DATE: July 16-2009 TIME: AM ☑ PM ☐
ATTENTION: LINDA/CHANTEL.
ACUREN JOB NO.: 188-09-001468
ADDRESS: 1270 ABERDEEN ST. HAWKESBURY, ON. K6H 1K7
PO/WO NO.: —
WORK LOCATION: HAWKESBURY
ACCEPTANCE STD.: ASTM 1417 REV./DATE: 2007
PROJECT: F.P.I. ON CLOSS TUBES.
ITEM(S) EXAMINED: 6 - X - TUBES

JOB DESCRIPTION | PROCEDURE NO. LT-XXXX REV./DATE | TECHNIQUE NO. LT-XXXX-XXX REV./DATE

PART NO.: MATERIAL: ALUMINUM ALLOY THICKNESS: —
SCOPE: WET FLOURESCENT LIQUID PENETRANT INSPECTION CARRIED OUT 100% EXTERNAL

TEST DETAILS

METHOD	☑ FLUORESCENT ☐ VISIBLE	☑ WATER WASH	☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED
FAMILY BRAND	MAGNAFLUX	BLACK LIGHT S/N 1645	☐ OUTPUT > 1000 µ W/CM² ☐ AMBIENT < 2 fc
PENETRANT	ZL 67 MINIMUM DWELL TIME ~~45~~ 40 MIN.	LIGHTING EQUIP.	☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT>100 fc @ SURFACE
PENETRANT REMOVER	H2O MINIMUM DRY TIME >10 MIN.	OTHER	LABNO
DEVELOPER	SKD 52 MINIMUM DWELL TIME 10 MIN.	LIGHT METER S/N	CAL DUE DATE DEC. 8-2009
DEVELOPER TYPE	☑ NON AQUEOUS ☐ AQUEOUS ☐ DRY		

TEST SURFACE

SURFACE CONDITION	☐ AS GROUND	☐ AS WELDED	☑ MACHINED	☐ SHOT BLASTED	☑ CLEAN BARE METAL
SURFACE TEMPERATURE	☐ < - 4°C/ 20°F	☐ - 4°C/ 20°F TO 10°C/50°F		☑ 10°C/50°F TO 52°C/125°F	☐ > 52°C/125°F

RESULTS- (☐ METRIC ☐ IMPERIAL)

	ACCEPT	REJECT
Work order #		
1 - 50081	✓	
1 - 50094	✓	
1 - 50045	✓	
1 - 50019	✓	
1 - 50038 V	✓	
1 - 50044	✓	

FT 07020

NO RELEVANT INDICATIONS WERE FOUND ON THESE SIX CLOSS TUBES

Scope of Services
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.
Standard of Care
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE: Dan Titley (PRINT) (SIGNATURE)
TECHNICIAN (SIGNATURE): (PRINT) (SIGNATURE)
NAME (PRINT): MIKE JOHNSTON (1ST TECHNICIAN) (2ND TECHNICIAN)
CGSB LEVEL II SNT LEVEL — CGSB LEVEL — SNT LEVEL —
CGSB REG. NO 6066 CGSB REG. NO —

DTR # E-27929
REPORT REVIEWED BY:
NAME INITIALS

WHITE – CLIENT COPY CANARY – OFFICE COPY PINK – TECHNICIAN COPY GOLD – OFFICE COPY